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Effects of Peer Assessment on Academic Achievement and Interest of Students in Geometry

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Abstract
Globally, peer assessment has been confirmed as a strategy which can offer the merits of intellectual structure as well as a socially pleasurable form of transmission of the structure. It can transform learning from a private to a social activity by involving learners in responsibility for their own and more importantly other learner's education, thus increases social interaction within an educating institution and making learning and its end product more rewarding. More so, all these reasons make the average students to prefer this mode of assessment. The paper critically reviewed peer assessment technique as it enhanced students' achievement in mathematics (Geometry) comparing the various conventional teacher assessment techniques. The literature reviewed has implications for government, teachers, ministries of education, professional associations and students. Based on the literature reviewed some recommendations were made. These include organization of workshops, seminars and conferences for teachers to enable them practice the recommended peer assessment of this paper in the classroom situation among others.

Keywords: Peer Assessment, Academic Achievement, Interest, Geometry, Mathematics

Introduction

It is a well known fact today that science has become an integral part of man's life. Science and Technology influence man in all aspects of life including feeding, clothing, shelter, healthcare as well as the leisure. The Science and Technology related subjects that would enable the students have a substantial understanding of science and be able to apply scientific knowledge in solving problems in their changing society are *Mathematics*, Physics, Biology, Health sciences, Introductory Technology, Chemistry to mention but a few. *Mathematics* is the science of space and numbers. The study of space is called *Geometry*; the study of numbers is called Arithmetic, while the hybrid of geometry and Arithmetic is called Algebra. Mathematics therefore, can be said to be the bedrock of technology. For proper understanding of science, mathematics play a major role, hence referred to as the queen of all sciences (Odili, 2006).

Assessment as an integral part of learningprocess has been defined by Ukwuije (1989:20) as "a systematicprocess of collecting information, analyzing the information collected, and then using the analyzed results to form judgment which are then used in decision making". Nasir (2002) defined educational assessment as "a process of seeking, obtaining and quantifying data with a view of making value judgment about objects, events, or their characteristics". Habib (2006) opined that "in the teaching and learning situation, assessment tries to determine the learners' performance or progress, tries to measure their learning outcomes or, more precisely, tries to measure the changes that have taken place in their behavior as a result of a particular learning task." Assessment can therefore be considered as the measurement of the degree of behavioral changes that have taken place in a learner. The teacher whose duty it is to ensure effective teaching and learning has to be concerned with motivating students to begin and continue learning. He guides the direction of students' interests and efforts, as well assesses their learning outcomes. It is very important

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that the students' learning outcomes should be properly assessed. This makes it imperative that for effective feedback in the teaching and learning process to take place, students must be adequately and appropriately assessed.

In Nigeria, educationalassessmentisbased on continuousassessment. This is stipulated in the National Policy on Education that "educational assessment and evaluation will be liberalized by passing them in whole or part on continuous assessment of the progress of the individual" (Federal Republic of Nigeria (FRN); 2004:9). The successful implementation of continuous assessment in schools as opined by Abubakar (2009) "is dependent on efficient use of variety of techniques in assessing students' learning outcomes. Among the various techniques is the Peer Assessment Technique (PAT). In peer assessment, the responsibility of evaluation or assessment shifts away from the teacher to the learners themselves as they review and appraise the work or achievement of other students under the supervision of the teacher. Tanko,Murna and Lantana (2008) noticed that peer assessment stimulates student's motivation and encourages deeper learning and understanding.Emphasizing the need for students' involvement in the assessment of their classroom activities, Suthon (2004) considered such involvement as essential component of successful learning.

Chomombo (1987) define peer assessment as a form of assessment where students of the same class and subject are given the opportunity to be involved in assessing their own learning outcomes. Gowon and Gambo (2008) sees peer assessmentas a situation where students evaluate each other's work under the supervision and direction of the teacher rather than the teacher doing the evaluation. They further explained that it is a situation where students assess themselves most of the time rather than the teacher.

Various Forms of Peer Assessment

Peer assessment can be of different forms. Badamasi (2009) described the form of peer assessment where students are formed in groups of five or numbers the teacher thinks are convenient. Groups are given problem-topics to work on. They discuss ideas and ways of working on the topic-solution where a member of the group writes down what was discussed (here the member becomes the secretary of the group). At the end, members of the group will write their names at the end of the assignment scripts. At the end of the stipulated period, groups exchange their scripts among themselves. The teacher discusses the solutions/answers and writes them on the board while the group marks the scripts. General corrections are then done. There is the project-based type of peer assessment. Hodgman (1997) and Prins (2005) described this as where students are given projects in groups. After carrying out the project, they will explain to the entire class how the project was done and they would be assessed by other students.

Peer assessment can be in form of a module. Badamasi (2009) mentioned that in this form of peer assessment, student presentation is set and the criteria for assessment agreed upon by the students at the start of the unit or supplied by the teacher. After the presentation is given, students rank their performance against the criteria.There is yet another form of peer assessment where each student displays his or her work, describes it and solicits reaction from classmates. Ronke (2007), in explaining this form of peer assessment said that when students explain their work to the class, their fellow students usually do a critic of the work, then rate the work and offer useful suggestions for the improvement of the work.

In another form of peer assessment, students are given the assessment exercises on previously taught topics. At the end of a stipulated period, they stop and exchange their papers/scripts/exercise books with the help of the teacher who ensures that papers are as far as possible from their owners. Answers could be written on the board by the teacher while students mark the script they have; or having exchanged the scripts, questions and answers will be discussed in class as students mark the papers, Gowon and Gambo (2008) said that "this method is communicative in nature and this type of assessment is usually good with

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mathematical items (in geometry study). Scripts are later returned and students further correct their work themselves in the light of the assessment.

Other forms of peer assessment are identified in models or formats. Miao and Koper (2007) identified the four-step model of peer assessment known as the Meta Model. In the Meta Model, the peer assessment process has four stages namely; Design Assessment, Do Assessment, Give Feedback and React to Feedback.

1. **Design Assessment:** In the Design Assessment stage, students are involved in activities such as setting the criteria, designing instruction, constructing assignment and setting the time.
2. **Do Assessment:** In the second stage, Do Assessment stage, candidates are engaged in activities such as responding to questions or performing tasks according to the assignment.
3. **Give Feedback:** In the Give Feedback stage, the students assess the assignment outcomes by providing feedback in form of comments, rates and grades.
4. **React to Feedback:** In the React to Feedback stage, the students will view the received feedback.

Miao and Koper explained that in certain situations, additional 'React to Feedback' and 'Give Feedback' stages can be repeated for many rounds where students can improve their own assignment outcomes and even ask other students in the same group to elaborate feedback and/or to review the improved assignment outcome.

The VALUED model of peer assessment has five phases. Halliru (2005) gave the meaning of the acronym 'VALUED' as follows:
(1) Valued (2) Assessments (3) Links (students') (4) Evaluation of Design
(5) Design Solutions Assessed

1. **Valued:** In this phase, Valued (Design Brief), the design problem is outlined by the teacher and discussed by all the students.
2. **Assessment:** At this phase, Assessment and Design criteria Developed, students are encouraged to make lists of design evaluation criteria for use as assessment criteria.
3. **Links (students'):** This phase is known as the Links made between the Design and Assessment Process. During this phase, students are encouraged to use a design process that supports their project work and personal values. They are encouraged to develop a list of design evaluation criteria needed to further the design process. They are also encouraged to make links between these evaluations and those needed to assess the project.
4. **Evaluation of Design:** The Evaluation of Design and/or Assessment Criteria for self and peer assessment purposes. During this phase, students finalize their design project work. Here, the students engage in formal and informal discussions in readiness for peer assessment to occur in phase five.
5. **Design Solutions Assessed:** The Design Solutions Assessed, is the last phase. At this stage, students have reached a solution to design problem in readiness for peer assessment to occur. Students are encouraged to participate and accept their role as assessors and to use the written criteria to assess each student.

   The VALUED model was developed as a resource for learners involved in a design and project-based curriculum.

Another peer assessment model is the nine-step model identified by Othman (2008). The model was used to find out the extent to which group assessment could be employed in evaluating learning outcomes in secondary school mathematics. The nine steps are presented as follows:

1. Selection of objectives
2. Identification of what the students have learnt
3. Identification of what they have not learnt

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4. Identification of the problems they encountered during the lesson
5. Self assessment
6. Construction of assessment instrument
7. Administration of the instrument to the students
8. Peer assessment
9. Collation of scores and feedback

In the nine-step model in peer assessment, the objectives to be achieved are firstly identified. Othman (2008) noted that the co-operation of the teacher and the learners start with joint selection of objectives. In the second step, the students say what they have learnt at the end of teaching. The third stage is identifying what the students have not learnt. At the fourth stage, the students will say what problems they encountered during the instruction. The fifth step is the self assessment stage, where the teacher asks the students to evaluate themselves by asking them to write the grade they think they will make if given an exercise on the topic treated. In the sixth stage, the students are asked to set questions on the content covered through guidance of the teacher. At the seventh stage, the test instrument is administered on the students. As the students write the test, the teacher supervises them to ensure independence in their work. At the end of the test, the teacher collects the scripts. At the eight stage, the teacher gives the scripts back to the students in a reshuffled manner and ensures that no student marks his/her exercise book/script. At the ninth and final stage, the teacher collects the scripts, vets what the students have done and collates the scores.

Advantages of Peer Assessment

Peer assessment is a strategy which can offer the merits of intellectual structure as well as a socially pleasurable form of transmission of the structure. It can transform learning from a private to a social activity by involving learners in responsibility for their own and more importantly other learner's education, thus increases social interaction within an educating institution and making learning and its end product more rewarding. Goodland and Hirst (2010) opined that these reasons make the average students to prefer this mode of assessment.

Peer assessment trains those who participate in it in the act of being responsible persons. Goodlad and Hirst noted that by involving students in the teaching process, peer assessment can provide a valuable occasion for study service which can be developed into other activities related to the disciplines of various school subjects. They also revealed that a widely reported feature of peer assessment is the immense personal satisfaction enjoyed by assessors, who feel that they are needed. Those experiences of being wanted can contribute to personal growth. Hence peer assessment is attractive as a relatively simple way in which learners of practically any age and academic competence can be given responsibility.

Mahe (2004) and Sluster (2006) in their researches on peer assessment have found out that previously troublesome students take their work serious as a result of participating in peer assessment programmes. Through peer assessment students can experience the respect and admiration of their colleagues and thus enjoy the experience of success in social relationships.Mahe and Sluster concluded from a major review and analysis that even special education students can function effectively as assessors if they are trained and supervised appropriately, and that these students experience academic and social benefits by functioning either as assessors or as assesses. Hence they opined that peer assessment offers those who act as assessors the experience of being productive, a chance to develop themselves which might otherwise be dormant. They also revealed that peer assessment enables students to develop insight into the teaching-learning process and, perhaps to articulate their points of agreement and disagreement with teachers.

Behaviourist theory holds that learning increases if every response a learner makes, receives instant feedback and that learning is reinforced if correct responses are

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systematically rewarded (Goodlad and Hirst, 2010). Peer assessment offers students' instant assessments of their work as every student participate in the assessment thus lessening the work burden on the teachers. Every student also prompts feedback than otherwise, could have been possible if only the teacher is to assess the whole class.

Likely Problems and Solutions of Peer Assessment

Despite the numerous advantages of peer assessment, some disadvantages of this technique of assessment have been identified. Under competitive learning environment, there is the tendency of students to unfairly assess their colleague (Anaekwe, 2007). Some students would favour their friends, with that, any day their friends will be assessing them, they will likewise, award them marks than they merit. Yet, others will purposely grade those that are not friendly with them. According to Gana and Maryam (2011), Nuhu (2012), students' immaturity is the main reason advanced by teachers to account for the none use of peer assessment. Many teachers who refuse to use peer assessment technique in the class feel that students are not yet trained to perform such professional skills as assessing class work.

Othman (2008) summarized the above problems and proffer the following as solutions:

> The teacher can correlate their (students') assessment scores with their actual performance to ascertain the honesty of the students. This is at the first instance. He can then caution those who are insincere. With this practice, honesty (affective behavior) is inculcated in the students.

Students' Academic Achievement

Achievement may be regarded as behaviour exhibited at the end of a given period of time or within a given time range. Gali (2003:449) define achievement measure as the "assessment of terminal or criterion behaviour involving the determination of characteristics of students' performance with respect to specific standard". Achievement test result enables us to obtain information on the extent to which a student has attained the criterion performance. It also enables us to determine the relative position or rank of individual students with respect to their test performance. The former type of information makes it possible to compare the capability of one student with the capabilities of other students. Here the degree of proficiency of individual students need not be emphasized.Students, teachers, parents and society in general are very much concerned with the academic achievement of students. Underachievement elicits particular concern and attention. This is usually defined in terms of discrepancy between observed and academic achievement Grade point average (G.P.A) is usually taken as a measure of academic achievement.

Academic achievement has indeed attracted a lot of research studies in recent years. Several of these studies have sought to find out what factors influence it, how it is measured and how it can be enhanced. The approaches adopted in the studies have tended to follow the nature-nurture controversy. While many believed that nature only sets the limits and other factors like personality and environmental factors determine how much of this limit is actually achieved. In his book predication of Academic Achievement, Lavin (1965) listed 29 different variables which have been used as predicators of school achievement in over 300 studies. Some of these are: native intelligence (I.Q) personality characteristics, sex, sub-group, school influence, teacher influences and characteristics, social class and family.

Intelligence had been proven to have a strong personal influence on academic achievement. In adolescence, measure of intelligence is very stable and may not change significantly after (Mohammad, 2009). There is however no one to one relationship between I. Q. and achievement.

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Benson (2007) used the term students "Functional limit" to refer to the organic limit on learning and not the genetic limit. He postulated that the latter operates within boarder organic limits in determining what is actually learned. Benson reported that research evidence clearly show a persistent and significance-relationship between self-concept and academic achievement. Usman (2005:65) stated that "the child with a negative view of self is a child who will not be able to profit adequately from school".

The effect of teacher influenced and characteristics on students' academic performance have been well documented but lack a general agreement. Datti and Shehu (2007) reported that "very little is known for certain about the relationship between teachers' personality and teachers' effectiveness. But Tukura (2011) believed that there is a relationship between students' achievement and the characteristics and behaviour of teachers. In summarizing that view of teachers' characteristics and pupils learning, Tukura noted that:

> *Efficiency of pupils learning is enhanced when guided by a teacher who is intelligent, well prepared in the subject matter, a high achiever while in college, and well educated – High interest in students and subject matter, favourable attitude towards students and subject matter, able to vary his teaching method so as to accommodate the high and low achievers and to meet the motivational levels and interest of his pupils and a stable personality are associated with successful teaching.*

Gender Issues in Mathematics Achievement

Several studies have been carried out to ascertain whether or not the gender of the learners influence their academic achievement. Differences in opinion abound as regards the gender differentiation in which some eminent students significantly superior to their female counterparts in academic performance. Such schools include Maimuna, (2002) who in her study on the effect of games on mathematical achievement, interest and retention of junior secondary school students in Shiroro local government area of Niger State, she purposely sampled four secondary schools (JS 2) by simple random sampling. The data collected were analyzed using mean, standard deviation and ANCOVA. The findings revealed that the male students benefited more than their female colleagues. It was then recommended that teachers in teaching mathematics to festal monotony should use games.

For Ozofor (2010) who sampled 10 intact classes in his studies on the effects of two modes of CIA in Enugu discovered the same fact as Alio (2007). He carried out a quasi-experiment in Niger State. The data collected were analyzed using mean, standard deviation and ANCOVA, found females superior to males in achievement, interaction was significant. Ezenwa (1996) determined the effect of gender and school type on the mathematics achievement of students. He used 134 males and 106 females randomly selected from three school in Minna, Niger State for the study. The data was collected using 30 multiple choice items on three mathematics concept areas. The analyses of data revealed that male students were superior to the female in mathematics achievements. Also Usman and Hauwa (2007) investigated the effect of tangram puzzle game on student's performance in mathematics at Kano metropolis. Using a sample size of 62 males and 74 females. The non equivalent control group design was used and the result revealed that the male students had higher mean score in the experimental group than the female.

Some other researchers have conflicting views in their findings. Such findings favoured girls more than boys. For instance, Alio (2007) studying Polya's problem solving strategies in senior secondary school students achievement and interest in Niger State, sampled 320 students purposively. The data analyzed using mean, standard deviation and ANCOVA revealed that the females enjoyed the strategies more than their male counterparts. He recommendation urged the teachers to employ this Polya's method in teaching

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mathematics. According to Akilu (2010), using a sample of 450 students in his studies, analysis of the data collected using mean, standard deviation and two ways ANOVA. His finding agreed with that of Alio (2007) and Abdullahi (2001) that females are superior to males in achievement. But interaction between school type and location in achievement was not significant.

Conclusion

Literature search showed that mathematics is unavoidably found in many areas of human activities. In teaching mathematics concepts, therefore there is the need to develop the students' ability to see mathematics in a situation and to use the knowledge to solve problems that arise from it. However, over the years, students' performances in mathematics, irrespective of gender have been very poor. This was attributed to the teaching strategies adopted by teachers in presenting the concept. Thus, researchers have continued to search for variety of teaching strategies which could facilitate learning, improve interest in students and enhance performance in mathematics.

The review of related studies highlighted the various teaching strategies which were found effective in facilitating learning and development of positive attitude and interest of students towards mathematics and other science subjects. They include the discovery, laboratory, target, inquiry, Polya problem solving strategies Continuous Assessment. It was clear from the literature search that the authors emphasized the use of these strategies in mathematics and science teaching.In peer assessment, students are given the opportunity of assessing their colleagues in the class by exchanging the exercise books for assessment. The rationale for peer assessment according to (Khalil, 2009) is to stimulate students to study regularly, enhance healthy competition, increase in the subject and improve the overall examination performance.

Based on these discussed above none of the researcher worked on the use of peer assessment technique in the teaching of geometry to secondary school students. In fact, there is little evidence of that hence; this study is geared towards filling this gap thereby highlighting the effects of peer assessment technique on students' performance in geometry.

Recommendations

The following recommendations were made in views of the foregoing literature review:

1. Since peer assessment technique has been found to enhance the quality of achievement and interest in Geometry, mathematics teachers should be encouraged to employ it more in the teaching/assessment of the subject. By so doing the achievement and interest in Geometry could be increased.
2. The fact that literature reviewed shows that positive achievement and interest scores were recorded through peer assessment technique, calls for teachers to acquaint themselves with the distinctive characteristics of this technique with a view to enhancing student's cognitive and affective outcomes of learning. This could be done through seminars, conferences and workshops organized by government and professional bodies like Mathematical Association of Nigeria (MAN); Science Teacher Association of Nigeria (STAN).
3. Teacher training, tertiary institutions should include peer assessment techniques as one of the methods of evaluation and should impart the usage to the student teachers.
4. Mathematics teachers should pay greater attention to the issue of gender differences in the Geometry classrooms. They should as much as possible eliminate contents, instructional techniques, materials and assessment techniques

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that will bring about gender difference in their classrooms.They should use peer assessment technique as it reduces gender difference in Geometry.

References

Abubakar, A.A. (2009). Continuous Assessment in 6-3-3-4 system of Education. In Akpa, G.O. and Udoh , SU (Eds.). *Towards Implementing the 6-3-3-4 system of Education in Nigeria.* Jos; Tech-Source Electronic Press.

Alio, .F.F. (2007). *Assessment of Polya's problem solving strategy in secondary school students' achievement and interest in mathematics.* An Unpublished Ph.D. Thesis, Ahmadu Bello University, Zaria, Nigeria.

Anaekwe, D.A. (2007). Effect of students' Interaction Patterns on Cognitive Achievement, Retention and Interest in Chemistry. Unpublished Ph.D Thesis.Nsukka. University of Nigeria.

Badamasi, S.T. (2009). Evaluation in the Nigerian Education system. An overview. *Journal of all Nigerian Conference of Principals of Secondary Schools* 1(2), 50-59.

Benson, P. (2007). Classroom Behaviour and Underachievement. *American Journal of Education Researcher.* 1, 249-260.

Chomombo, W.W. (1987). World view, culture of science education interest: *Science Education:* 5(4): 5-8.

Datti, J. & Shehu, A.M. (2007). Student Response to continuous Assessment, Examination format and Peer marking. *Research and Development in Higher Education.* 2, 85-89.

Ezenwa, V.I. (1996). Learning using the concept mapping and guided discovery strategies. Effect on achievement of gender and levels of achievers. *Journal of Science Teaching and Learning* 2(1&2). 23-30.

Federal Republic of Nigeria (FRN) (2004). National policy on education (Revised). Federal Ministry of Education Abuja: NERDC.

Gali, S.T. (2003). *Modern Methods in Sciences Education in Africa.* Zaria; Dandolo Publishers.

Goodlad, S & Hirst B. (2010). *Fifth Edition: A Peer Tutoring: A Guide to learning by teaching London. Kogan Page.*

Gowon, T.I. & Gambo, J.E. (2008). *Educational Psychology: A Reality Approach* (4th Ed), Lagos white plans NY publishers.

Habib, G.W (2006). Some effects of Reinforcement on achievement and behaviour in a regular classroom. *Journal of Educational Psychology* 63(3), 187-193.

Halliru, V.F. (2005). *Inaugural lecture: Unmasking some aversive aspects of school mathematics and strategies for averting them.* Enugu. Snap Press.

Hodgman, V.F. (1997). And haggadical inquiry. A pedagogical model for Teaching Mathematics within next millennium. ABACUS: *The Journal of the Mathematics Association of Nigeria* 25, (1), 64-72.

Scanned with CamScanner

Khalil, A. (2009). Mathematics for Development. The Nigerian Tribune. Wednesday February 8, P, 4-5.

Lavin, D.E. (1965). *The prediction of Academic Performance.* New York John Wiley and Sons Inc.

Mahe, A.A. (2004). Behavioural Effect of using conduct problem Adolescents as cross-Age Tutors. *Psychology in Schools.* 19(3), 360-364.

Maimuna, B.G. (2002). Expository and Discovery methods of teaching secondary School chemistry in Mgbodele, T.D. Ayoldele, S.O. Akubue, A: and Obioma, G.O (Eds). Issues in teacher Education and Science Curriculum in Nigeria, Curriculum organization of Nigeria Monograph series.

Maryam, A.M. (2011). Constructivism and Instructional design. *Education technology:* May, 45-53.

Miao, B.G. & Koper, L.L. (2007). *Discovery and inquiry methods.* In a Lewy (Ed). The international encyclopedia curriculum oxford. Pergamon press.

Mohammad, B.G. (2009). *Education Research: Basic Issues and Methodology in Northern Nigeria.* Zaria. Dandolo Publishers Limited.

Nasir, I.A. (2002). Effect of practical discussion outside the classroom on students performance in mathematics. ABACUS: *The Journal of the Mathematics Association of Nigeria* 27(1), 45(1), 45-49.

Nuhu, B.G. (2012). Gender and content areas interaction in physics achievement and the Discrepancies in Gender difference in Science Achievement. *Institute ofJournal of Studies in Education.* 8(1), 35-38.

Odili, G.A. (2006). *Teaching Trigonometry and Geometry in Secondary Schools.* Obosi. Anachina Education Books.

Othman, G. (2008). *Curriculum Implementation and instruction.* Onithsa Uni-World Education Publishers (Nigeria) Limited.

Ozofor, D.D. (2010). *Assessment of Two Models of Computer Aided Instruction on Students' Achievement & Interest in Statistic and Probability.* Unpublished M.sc. Thesis, Ahmadu Bello University, Zaria.

Prins, F. (2005). *The Purpose and Trend of the Conference, in Kraracens, W.C. (Eds.). Negro Self-Concept: Implications for School and Citizenship.* New York: McGraw-Hill Book Company.

Ronke, P. (2007). *Assessing Students: How shall we know them?* Ibadan: Kogan Page publishers.

Sluster, M.H. (2006). *Research on Mathematics Learning.* In J.N. Payne (Ed) mathematics learning in early childhood. Thirty-Seventh year book. Reston, V.A. National council of teachers of mathematics.

Suthon, S.S. (2004). *Instructional System Design: Five views of the Field in CJ Anglin (Ed) Instructional Technology: Past, Present and Future.* (2nd Ed: PP 131-142). Englewood, Co: Libraries Unlimited, Inc.

Scanned with CamScanner

Tanko, Y., Murna, J. & Lantana, .N. (2008). Women and Mathematics, Science and Technology; Challenges for Nigerian Women. *Journal of Women in Colleges of Education*. 2(3), 24-34.

Tukura, G.E. (2011). Perceived Science Ability as a factor in the course selections of men and women in college. *Journal of Research in Science Teaching*. 23(4), 89-92.

Ukwuije (1989). *Resolving the Continuous Dilemmas in School Geometry*. Department of Education, University of Chicago.

Usman, .N. & Hauwa, N.A. (2007). Process Errors committed by Students in proving some Geometric theorems. *Journal National Research in Education*. 1(2), 20-30.

Usman, K.O. (2005). The need to retain in service mathematics teachers for the attainment of the objectives of University Basic Education. ABACUS: *The Journal of the Mathematics Association of Nigeria 65*-44.

West African Examination Council (2011). Chief Examiners' Reports. Abuja: WAEC. Nigeria.

Scanned with CamScanner